

AMENDMENTS TO THE CLAIMS

1. **(Currently amended)** A recombinant nucleotide sequence which codes upon expression a bifunctional hybrid active-site serine β -lactamase protein, wherein the β -lactamase protein is a class A, C or D β -lactamase protein that bears at least one heterologous sequence, ~~wherein the β -lactamase protein bears the at least one heterologous sequence in a region forming a juncture between alpha helix 8 and alpha helix 9 of said active-site serine β -lactamase in a region located between two neighboring alpha helices of the β -lactamase sequence, wherein the region is selected from the group consisting of:~~

- a) a region forming a juncture between alpha helix 8 and alpha helix 9 of TEM-1 β -lactamase; and
- b) a region forming a juncture between the alpha helices of said class A, C or D β -lactamase, said alpha helices corresponding to the alpha helix 8 and alpha helix 9 of the TEM-1 β -lactamase, and

wherein the hybrid protein has two functions, wherein, in said bifunctional hybrid protein, the first function is associated with the β -lactamase portion and the second function is associated with the at least one heterologous sequence having a biological function which is different from the first function.

2.-5. **(Canceled)**

6. **(Previously presented)** The recombinant nucleotide sequence according to Claim 1, wherein the β -lactamase moiety is a class A β -lactamase, wherein said β -lactamase class A protein bears the at least one heterologous sequence in the region forming a juncture between alpha helix 8 and alpha helix 9.

7. **(Previously presented)** The recombinant nucleotide sequence according to claim 1, wherein the region forming a juncture between alpha helix 8 and alpha helix 9 is selected from the group consisting of:

- a) amino acid sequence Thr195 to Leu199 of the TEM-1 β -lactamase; and
- b) an amino acid sequence in a β -lactamase other than TEM-1 β -lactamase corresponding to the amino acid sequence Thr195 to Leu199 in TEM-1 β -lactamase.

8.-11. **(Canceled)**

12. **(Currently amended)** A recombinant nucleotide sequence which codes upon expression a bifunctional hybrid class A β -lactamase ~~class A~~ protein, wherein the class A β -lactamase ~~class A~~ protein bears at least one heterologous sequence in a region located between two neighboring alpha helices of the β -lactamase sequence, wherein the region is selected from the group consisting of:

a) ~~the~~ a region forming a juncture between alpha helix 8 and alpha helix 9 of the TEM-1 β -lactamase; and

b) ~~the~~ a region forming a juncture between the alpha helices of said a homologous class A β -lactamase ~~class A~~, said alpha helices corresponding to the alpha helix 8 and alpha helix 9 of the TEM-1 β -lactamase,

wherein the hybrid protein has a first function and a second function, wherein the first function is associated with the β -lactamase portion and is selected from the group consisting of:

c) hydrolyzing β -lactams (β -lactamase activity); and

d) binding covalently and in a stable manner to substances selected from the group consisting of β -lactams, derivatives of β -lactams, and inhibitors of β -lactams;

and wherein the second function is associated with the at least one heterologous sequence having a biological function which is different from the first function.

13.-15. **(Canceled)**

16. **(Previously presented)** The recombinant nucleotide sequence according to Claim 1, wherein the at least one heterologous sequence has a length of 11 or more amino acid residues.

17. **(Previously presented)** The recombinant nucleotide sequence according to Claim 1, wherein the at least one heterologous sequence has a length of 18 or more amino acid residues.

18. **(Previously presented)** The recombinant nucleotide sequence according to Claim 1, wherein the at least one heterologous sequence has a length of 25 or more amino acid residues.

19. **(Previously presented)** The recombinant nucleotide sequence according to Claim 1, wherein the at least one heterologous sequence has a length of 50 or more amino acid residues.

20. **(Previously presented)** The recombinant nucleotide sequence according to Claim 1, wherein the at least one heterologous sequence has a length of 100 or more amino acid residues.

21. **(Currently amended)** The recombinant nucleotide sequence according to Claim 1, wherein the nucleotide sequence coding for the β -lactamase sequence encodes ~~is selected from the group consisting of:~~

- a) ~~nucleotide sequence coding for the β -lactamase TEM-1 (SEQ ID NO: 1)~~
- b) ~~nucleotide sequence coding for the β -lactamase BlaP (SEQ ID NO: 2);~~
- c) ~~nucleotide sequence coding for the β -lactamase BlaL (SEQ ID NO: 3);~~
- d) ~~nucleotide sequence coding for the β -lactamase AmpC (SEQ ID NO: 39); and~~
- e) ~~nucleotide sequence coding for the β -lactamase BlaR-CTD (SEQ ID NO: 41);~~
- f) ~~a recombinant sequence of one or more of a) to e); and~~
- g) ~~nucleotide sequences which hybridize under stringent conditions to the nucleotide sequences of any one of a) to f).~~

22. **(Currently amended)** The recombinant nucleotide sequence according to Claim 1, wherein the at least one heterologous sequence is ~~related to a function~~ selected from the group consisting of: ~~being an epitope, being a specific binding partner for antibodies, being a sequence that is specifically recognized and bound by antibodies, a sequence having a binding affinity to earth alkali and metal ions, a sequence having enzymatic activity, being a toxin, (STa heat-stable enterotoxin of *E. coli*), bearing a glycosylation site, bearing a glycosylated peptide, being a specific binding partner for any polypeptide or any ligand, and a sequence having a binding affinity to dsDNA, and ssDNA or RNA (having a binding affinity to nucleotide and polynucleotide).~~

23. **(Currently amended)** The recombinant nucleotide sequence according to Claim 1, wherein the at least one nucleic acid sequence encoding the at least one heterologous sequence ~~is selected from the group consisting of: STa (heat-stable enterotoxin of *Escherichia coli*, SEQ ID NO: 21); encodes protein A of *Staphylococcus aureus* with two Fc Binding domains, (SEQ ID NO: 23 and 25), ~~protein G of *Streptococcus pyogenes*, (SEQ ID NO: 27 and 29), a linear antigenic determinant of the hemagglutinin of the Influenza virus (SEQ ID NO: 31), a fragment of human phospholipase type 11 (hPLA2) (SEQ ID NO: 33), and LPS binding amino acid sequence (SEQ ID NO: 35), and nucleotide sequences which hybridize under stringent conditions to said nucleotide sequences.~~~~

24.-53. **(Canceled)**